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## The dichotomous *Panicum*; Some new Species.—I

By GEO. V. NASH

### ***Panicum Bushii***

A tufted perennial, glabrous, with the exceptions noted below. Culms about 3 dm. tall, the nodes sparingly barbed, finally much branched: leaves about 3; sheaths about as long as the internodes, those on the branches short and overlapping; ligule a dense ring of short hairs about 0.2 mm. long; blades erect, linear, acuminate, serrulate and very rough on the margins, ciliate at the base with a few very long hairs arising from papillae, the larger primary blades 8–10 cm. long, 3–4 mm. wide, those on the branches usually 6 cm. or less long: panicle much exserted, 6–7 cm. long, its branches erect-ascending, the larger 3–3.5 cm. long, the secondary panicles much smaller: spikelets 2.5 mm. long and about 1.2 mm. broad, obovate, the scales glabrous, the first scale orbicular or very broadly ovate, 1-nerved, rounded or obtuse at the apex, about one-third as long as the spikelet, the second and third scales 7-nerved, the second a little the shorter, the fourth scale yellowish white, about 2 mm. long and 1.2 mm. wide, about as long as the second.

Collected by B. F. Bush, in dry ground, in McDonald Co., Missouri, July 24, 1893 no. 413. Related to *P. angustifolium*, but the spikelets are glabrous and of a different shape and the sheaths and blades glabrous.

### ***Panicum ciliosum***

A tufted perennial. Culms 3–5 dm. tall, rather stout, ascending, papillose-hirsute with spreading hairs, finally much branched: leaves 4 or 5; sheaths shorter than the internodes, densely hirsute with spreading hairs, ciliate on the margins; ligule a dense ring of hairs about 0.5 mm. long; blades erect or ascending, narrowed toward the base, glabrous above, ciliate on the margins, the stiff hairs arising from papillae, the lower surface densely pubescent between the nerves with short spreading hairs: panicle broadly ovate, about 8 cm. long, included at the base, its axis pubescent with short hairs, the branches spreading, the larger about 3 cm. long: spikelets a trifle less than 2 mm. long and about 0.9 mm. wide, elliptic, the outer 3 scales strongly pubescent with rather long spreading hairs, the first scale broader than long, about one quarter as long as the spikelet, 1-nerved, rounded at the apex, the

second and third scales 7-nerved, about equal in length, the fourth scale white, a little longer than the third, about 1.6 mm. long and 0.8 mm. wide.

Type collected by S. M. Tracy, at Biloxi, Mississippi, September 1, 1898, no. 4580. In habit and general appearance much resembling *P. pubescens*, but the ciliate blades with the upper surface glabrous at once separate it. The specimen above described is the late state and has the panicle included; the early form of the plant will probably be found to have an exserted primary panicle.

### ***Panicum Clutei***

A tufted perennial, glabrous, with the exceptions noted below. Culms rather stout, 6–8 dm. tall, at length branched: leaves 4 or 5; sheaths rather loose, minutely pubescent at the apex and usually more or less ciliate on the exterior margin, the exterior basal ones pubescent; ligule a dense ring of hairs about 0.3 mm. long; blades firm, ascending, often appearing as if erect in pressing, lanceolate, smooth on both surfaces, rough on the margins, the lower and larger 7–14 cm. long, 7–12 mm. wide, the basal blades ovate-lanceolate, 3–4 cm. long and 10–13 mm. wide, long-ciliate on the margins: panicle considerably exserted, broadly ovate, 6–10 cm. long, its ascending branches smooth, the larger ones 4–6 cm. long: spikelets oval, acutish, about 2.3 mm. long and about 1.3 mm. wide, the first scale broadly ovate, obtuse or somewhat acute, 1-nerved, glabrous or nearly so, the second and third scales densely pubescent with very short ascending hairs, 9-nerved, the second one shorter than the third and usually a little shorter than the fourth, the fourth scale yellowish, oval, about 2 mm. long and about 1.2 mm. wide.

Pine-barrens of southern New Jersey. Collected by Mr. W. N. Clute, after whom I take pleasure in naming it, on a trip from Tuckerton to Atsion, July 3–6, 1899. A most distinct species.

### ***Panicum curtifolium***

A tufted perennial, glabrous, with the exceptions noted below. Culms slender, weak, 2–3 dm. tall, finally much branched: leaves 3 or 4; sheaths less than one half as long as the internodes, usually about one third as long, sparsely pubescent with long weak spreading hairs; ligule a dense ring of hairs about 0.3 mm. long; blades widely spreading, lanceolate, minutely serrulate and rough on the margins, a few long hairs on the upper surface just back of the ligule, the culm blades 1.5–3 cm. long, 3–4.5 mm. wide, the basal leaves 4–5 cm. long: panicle considerably exserted, broadly ovate,

2.5–3.5 cm. long, its slightly hispid branches widely spreading, the larger 1.5–2 cm. long: spikelets about 1.5 mm. long and about 0.75 mm. wide, elliptic, the scales glabrous, the first scale about one third as long as the spikelet, broadly ovate, obtuse, 1-nerved, the second and third scales 7-nerved, the second shorter than the third, the fourth scale about equalling the third, about 1.25 mm. long and about 0.6 mm. broad, yellowish-white, obscurely apiculate.

Collected by S. M. Tracy at Ocean Springs, Mississippi, May 2, 1898, no. 4598. Related to *P. lucidum* Ashe, but distinguished by its smaller spikelets and sparsely pubescent sheaths.

### ***Panicum decoloratum***

A more or less purplish tufted perennial, glabrous, with the exceptions noted below. Culms 4–6 dm. tall, stout, finally branched, the nodes barbed: leaves 5 or 6, extending to the base of the panicle, the upper one including its base; sheaths loosely embracing the culm, usually overlapping and hence concealing the culm, the lower and basal ones papillose-hirsute between the nerves, the hairs of the former early deciduous, the upper sheaths ciliate on the external margin and with a minutely pubescent ring at the apex; blades erect or ascending, variously colored with black-purple, broadly lanceolate, a little rough on both surfaces, especially above, cordate-clasping at the base, 7–12 cm. long, 1.2–2 cm. wide, minutely serrulate and very rough on the margins: panicle included at the base, its branches hispidulous: spikelets on hispidulous pedicels, 2.7 mm. long and 1.3 mm. wide, elliptic, the first scale from nearly orbicular to broadly ovate, about one third as long as the spikelet, 1-nerved, obtuse or rounded at the apex, glabrous, the second and third scales rather sparingly pubescent with ascending hairs, 9-nerved, the second scale a little shorter than the third, the fourth scale slightly yellowish-white, about 2.4 mm. long and 1 mm. wide, obtusely and rather obscurely apiculate, minutely pubescent at the apex.

Collected by Mr. E. P. Bicknell on a sandy railroad bank at Tullytown, Pennsylvania, May 30, 1899. The panicle in the material at hand may not be fully developed, and so a later stage may show it exserted instead of included at the base. In habit much resembling *P. clandestinum*, but that species is larger in every way, the pubescence is harsh and hispid and occurs on all the sheaths, the blades are much longer and with the margins near the base conspicuously ciliate with long stiff hairs, and the spikelets are larger (exceeding 3 mm. in length).

***Panicum Earlei***

A densely tufted perennial. Culms slender, 1-1.5 dm. tall, usually with a few long weak scattered hairs below, finally branched, the nodes rather sparingly barbed: leaves about 3; sheaths rather sparingly hirsute with long hairs; ligule a dense ring of hairs about 0.3 mm. long; blades ascending, lanceolate, rather sparingly hirsute on both surfaces with long spreading hairs, 1-3 cm. long, 2-6 mm. wide, minutely serrulate and roughened on the margins: panicle broadly ovate, 2-3 cm. long, its smooth branches spreading, the larger ones 1-1.5 cm. long: spikelets about 1.3 mm. long and 0.7 mm. wide, elliptic, obtuse, glabrous, the first scale orbicular or broadly oval, 1-nerved, obtuse, the second and third scales 7-nerved, the second scale shorter than the third and fourth, the fourth scale white, about 1 mm. long and 0.6 mm. wide, oval.

Type collected at Auburn, Lee Co., Alabama, on May 7, 1898, by Messrs. F. S. Earle and C. F. Baker, no. 1532; no. 1535, of the same place and date, also belongs here.

***Panicum epilifolium***

A tufted perennial, glabrous, with the exceptions noted below. Culms 2-3.5 dm. tall: leaves 2 or 3; sheaths shorter than the internodes, minutely pubescent at the apex, ciliate on both margins with long slender hairs; ligule a scarious ciliolate ring about 0.2 mm. wide; blades widely spreading, linear-lanceolate, 4-7 cm. long, 5-7 mm. wide, minutely pubescent on the upper surface between the nerves, serrulate and very rough on the margins: panicle exserted, ovate, 5-7 cm. long, its branches spreading or ascending, the larger ones 2-2.5 cm. long: spikelets 3 mm. long and about 1.5 mm. broad, oval, obtusely apiculate, the first scale glabrous or with a few scattered hairs, 1-nerved, nearly orbicular, acute, a little less than one half as long as the spikelet, the second and third scales densely pubescent with short spreading hairs, 9-nerved, the second usually a little shorter than the third and fourth, the latter scale yellowish, 2.5 mm. long and a little over 1 mm. wide, elliptic, obtusely apiculate.

Type collected by the writer in a scrub hammock at Eustis, Lake Co., Florida, March 12-31, 1894, no. 45. Also secured at the same place by Professor L. M. Underwood, on March 22, 1891, no. 2250. It bears some resemblance in habit to *P. ciliiferum*, but is readily distinguished from that species by its glabrous sheaths, naked blade-margins and more acute spikelets.

**Panicum flavovirens**

A densely tufted light green perennial, glabrous, with the exceptions noted below. Culms 2-3 dm. tall, slender, finally much branched : leaves 2 or 3 ; sheaths very short, those of the primary leaves about one third as long as the internodes, one margin usually extending above the other, making the summit of the sheath more or less oblique, the lower sheaths ciliate on the margin, the exterior basal ones pubescent all over ; ligule a dense ring of short hairs about 0.2 mm. long ; blades thin, erect, without a white margin or nearly so, entire or very minutely serrulate, hence smooth or nearly so on the margin, linear-lanceolate, those on the main culm 2.5-4 cm. long, 2.5-4 mm. wide, commonly minutely pubescent on the lower surface between the nerves, those on the branches much shorter, the basal blades longer, 4-6 cm. long : panicle much exserted, 3-4 cm. long, broadly ovate, its branches spreading, the larger 1-2 cm. long, the secondary panicles much smaller, barely exserted and with spreading branches : spikelets 1.5 mm. long and 0.7 mm. broad, elliptic, the outer 3 scales densely pubescent with spreading hairs, the first scale 1-nerved, broadly ovate, obtuse, about one half as long as the spikelet, the second and third scales 7-nerved, about equal in length, the fourth scale yellowish-white, 1.3 mm. long and about 0.6 mm. wide.

Type collected by the writer in Lake Co., Florida, June 16-30, 1895, no. 2061 ; growing in swampy woods along the edge of road leading to the ford near the J. T. & K. W. R. R. bridge across the Wekiva river. No. 2487a, collected in a similar habitat at Lake City, Columbia Co., in the same state, on Aug. 30, 1895, is also referred here.

Differs from *P. albomarginatum* in the thin linear-lanceolate blades which are entirely or almost devoid of the white margin, and barely if at all rough on the margins. In *P. albomarginatum* the blades are very thick, much broader, and with a wide strongly serrulate white margin which is much thickened.

**Panicum Helleri**

A tufted perennial, glabrous, with the exceptions noted below. Culms 2-4 dm. tall, appressed-pubescent below with long hairs, the nodes sparingly barbed, finally branched : leaves 5 ; sheaths shorter than the internodes, the middle ones only about one half as long, ciliate on the exterior margin, bearing between the prominent nerves scattered papillae, from which sometimes arise stiff

hairs, the internerves of all but the upper sheaths minutely pubescent: ligule a dense ring of hairs about 0.6 mm. long: blades broadly lanceolate, thin, a little narrowed toward the sparsely ciliate rounded base, the margins minutely serrulate, rough, 6–8 cm. long, 6–12 mm. wide: panicle included at the base, 6–8 cm. long, its branches ascending, the larger ones 3–4 cm. long, the secondary panicles smaller: spikelets 3.25–3.5 mm. long and about 1.5 mm. wide, the first scale broadly triangular-ovate, 1-nerved, the second and third scales pubescent toward the base with a few scattered hairs, the second scale 11-nerved, the third scale 9-nerved, the fourth scale yellowish-white, 2.5 mm. long and about 1.3 mm. wide, oval, obtusely and obscurely apiculate.

Collected at Kerrville, Kerr Co., Texas, by A. A. Heller, May 14–21, 1894, no. 1759. Differs from *P. pernervosum* in the pubescent culm and sheaths, the broader blades of a different shape and the narrow spikelets which are usually sparsely pubescent.

### ***Panicum paucipilum***

A tufted perennial, glabrous, with the exceptions noted below. Culms 6–10 dm. tall, finally sparingly branched: leaves 5–8; sheathes one third to one half as long as the internodes, the external margin ciliate toward the summit; ligule a dense ring of hairs about 2 mm. long: blades erect or ascending, thickish, rather firm, sometimes minutely puberulent on the lower surface, usually with a few hair-bearing papillae at the base, the lower and larger 6–9 cm. long, 5–7 mm. wide: panicle finally considerably exserted, rather dense, oblong, usually 5–10 cm. long, its branches erect-ascending or erect, the larger ones 2.5–4 cm. long: spikelets numerous, about 1.4 mm. long and 0.8 mm. wide, oval, the first scale about one third as long as the spikelet, 1-nerved, orbicular, the second and third scales pubescent with spreading hairs, the former plainly, the latter obscurely, 9-nerved, the fourth scale yellowish, about 1.3 mm. long and 0.8 mm. wide, obscurely apiculate.

In wet soil, southern New Jersey to Mississippi. Type collected by Mr. E. P. Bicknell, at Wildwood, New Jersey, May 30 and 31, 1897. The following specimens from Mississippi are also referred here:

Ocean Springs, July 19, 1889, F. S. Earle; Biloxi, Sept. 1, 1892, S. M. Tracy; Beauvoir, May 13, 1898, S. M. Tracy, no. 4594 (distributed as *P. octonodum* S. & S.).

Intermediate between *P. octonodum* and *P. Eatoni*. Differs from the former, to which it is closely related, in the ciliate margin

of the sheaths, the few basal hairs of the blades, and particularly in the strongly pubescent spikelets. From *P. Eatoni* it may be distinguished by its much smaller spikelets with the first scale glabrous and orbicular.

### ***Panicum longiligulatum***

A tufted perennial, glabrous, with the exceptions noted below. Culms 4–5 dm. tall, slender, finally branching, the branches fasciculate much divided and forming dense masses at their ends; leaves 4 or 5; sheaths usually from one third to one half as long as the internodes, minutely pubescent between the prominent nerves; ligule a ring of long erect silky hairs about 3 mm. in length; blades ascending, lanceolate, obtusely and minutely pubescent on the lower surface, the margins serrulate and very rough, the primary culm blades 2.5–3 cm. long, about 3 mm. wide, those on the branches much smaller, the basal blades thick, broadly lanceolate, 4–5 cm. long: panicle oval, 5–6 cm. long, considerably exserted, its branches spreading, the larger ones about 3 cm. long: spikelets about 1.3 mm. long and 0.8 mm. wide, oval, the outer 3 scales densely pubescent with spreading hairs, the first scale ovate, 1-nerved, about one third as long as the spikelet, the second and third scales 7-nerved, about equal in length, the fourth scale yellowish white, about 1.2 mm. long and 0.7 mm. wide.

Collected by Dr. Geo. Vasey, at Apalachicola, Florida, in 1892. Its relationship is with *P. parvispiculum*, but its more slender culms, smaller blades and spikelets and the glabrous margins of the sheaths at once distinguish it.

### ***Panicum patentifolium***

A tufted purplish perennial, glabrous, with the exceptions noted below. Culms erect or nearly so, 2–4 dm. tall, puberulent, slender, finally much branched: leaves 2–4, rather distant; sheaths less than one half as long as the internodes, minutely pubescent, especially at the apex on the margins, rather loosely embracing the culm; ligule a dense ring of hairs about 0.25 mm. long; blades widely spreading, firm, lanceolate, 2.5–4 cm. long, 2–4 mm. wide, puberulent at the very base on the upper surface, smooth on both sides, rough on the margins, the basal ones similar in shape and texture but larger: panicle at length considerably exserted, broadly ovate, 4–6 cm. long, its axis and spreading branches puberulent, the larger branches 2–3 cm. long: spikelets about 2.5 mm. long and 1.3 mm. wide, the first scale orbicular, clasping, purple, at least at the base, 1-nerved, rounded at the apex, one half as long



as the spikelet, the second and third scales pubescent with spreading hairs, 7-nerved, the fourth scale white, a little exceeding 2 mm. in length, oval, minutely pubescent at the apex.

Type collected by the writer at Eustis, Lake Co., Florida, March 12-31, 1894, no. 72, in dry sand in a scrub hammock. No. 52 of the same collection also belongs here.

Related to *P. Webberianum*, but the more slender culms and the smaller and widely spreading blades readily separate it.

### ***Panicum perlongum***

A tufted pubescent perennial. Culms 2-4 dm. tall, simple, glabrous or sparingly pubescent, the nodes barbed, later with short basal culms: leaves 1 or 2; sheaths hirsute with long ascending hairs; ligule a dense ring of hairs about 0.7 mm. long; blades elongated, linear, erect, papillose-hispid beneath, glabrous, rough above, 2-3 mm. wide, the upper blade commonly 8-14 cm. long, occasionally shorter: panicle much exserted, generally extending beyond the apex of the upper leaf, 4-6 cm. long, its branches erect or erect-ascending, the larger ones usually 2-3 cm. long: spikelets, on hispidulous pedicels, obovate, about 3.25 mm. long and 1.5-1.75 mm. wide, the outer 3 scales with a few scattered long hairs, especially near the base, the first scale one quarter to one third as long as the spikelet, orbicular-ovate, 1-nerved, the second and third scales 9-nerved, about equal in length, the fourth scale oval, 2.5 mm. long and about 1.5 mm. wide, yellowish white, obtusely apiculate, its summit reaching the apex of the third scale.

On prairies and dry soil, Illinois to North Dakota, south to Indian Territory. Type collected in Indian Territory at Creek Nation, by M. A. Carlton, April 25, 1891, no. 98, and distributed as *P. depauperatum* Muhl. It differs from that species in the smaller pubescent obtuse spikelets with the second and third scales not exceeding the fourth scale. From *P. linearifolium*, to which it is more nearly related, it is separated by its larger sparsely pubescent spikelets.

The following specimens, distributed as *P. depauperatum* Muhl., are also referred here:

ILLINOIS: June 7, 1848, *S. B. Mead*.

SOUTH DAKOTA: Custer, July 18, 1892, *P. A. Rydberg*, no. 1100.

IOWA: Ames, June 22, 1896, *C. R. Ball*, no. 145.

KANSAS: Prairie, Riley Co., 1896, *A. S. Hitchcock*, no. 881.

***Panicum pernervosum***

A glabrous perennial. Culms 3–5 dm. tall, finally branching: leaves 3 or 4; sheaths ciliate on the exterior margin, the lower longer, the upper shorter than the internodes; ligule a dense ring of hairs about 0.5 mm. long; blades erect or ascending, narrowed toward the base, serrulate and very rough on the margins, the intermediate and upper blades 5–10 cm. long, 5–9 mm. wide, ciliate toward the base with a few long hairs, the lower ones usually pubescent on the lower surface, shorter and broader, ciliate for two thirds their length: panicle considerably exserted, 7–12 cm. long, its branches ascending, the larger ones 4–6 cm. long: spikelets 3 mm. long and 1.8 mm. wide, broadly oval, turgid, rounded at the apex, the scales glabrous, the first scale broader than long, 1-nerved, about one third as long as the spikelet, the second and third scales coarsely 9-nerved, the second a little shorter than the third, the fourth scale yellowish white, 2.5 mm. long and about 1.6 mm. broad, obtusely and rather obscurely apiculate.

Type collected by Elihu Hall in woods, at Houston, Texas, April 16, 1872, no. 830. Mr. G. C. Nealley also secured it in the same state in 1886.

***Panicum psammophilum***

A tufted perennial. Culms 2–4 dm. tall, appressed-hirsute below, puberulent above, finally much branched: leaves on the main culm about 4, occasionally 3 or 5; sheaths shorter than the internodes, appressed-pubescent, the basal ones with long hairs, the upper and those on the branches with very short hairs; ligule a dense ring of hairs about 1 mm. long; blades erect or nearly so, thick, firm, serrulate on the margins, puberulent beneath, the ovate-lanceolate basal ones, and occasionally also those on the culm, with a few very long scattered erect hairs on the upper surface, the primary blades lanceolate, 2–5 cm. long, 2–5 mm. wide, those on the branches 2–3 cm. long, 2–3 mm. wide; primary panicle broadly ovate, usually 2–3 cm. long, rarely larger, its axis and usually ascending branches puberulent: spikelets broadly obovate, 1.3–1.5 mm. long, rarely a little larger, and 0.8–1 mm. wide, obtuse, the outer 3 scales densely pubescent with spreading hairs, the first scale usually about one third as long as the spikelet, sometimes a little larger, 1-nerved, orbicular or broadly ovate, acute or obtuse, the second and third scales 9-nerved, the second usually a little shorter than the third, the fourth scale yellowish, 1.2–1.5 mm. long, oval.

In sandy soil, on or near the coast, Massachusetts to New Jersey. Specimens examined:

MASSACHUSETTS: Martha's Vineyard, *Miss Witman*, July, 1890; Ipswich, *Geo. V. Nash*, Aug. 25, 1898, no. 32.

NEW YORK: Fisher's Island, *C. B. Graves*, Aug. 29, 1898, no. 12.

NEW JERSEY: Wildwood, May 30 and 31, 1897, *E. P. Bicknell*; Tom's River, July 25-31, 1898, *W. N. Clute*, no. 175 (type); Tuckerton to Atsion, July 3-6, 1899, *W. N. Clute*.

Related to *P. Addisonii*, but at once distinguished by its smaller and relatively broader spikelets.

### ***Panicum pseudopubescens***

A densely tufted pubescent perennial. Culms usually rather stout at the base, 2-4 dm. tall, hirsute with ascending hairs, finally branched, the nodes barbed; leaves usually 3; sheaths less than one half as long as the internodes, densely hirsute with spreading hairs 1.5-2 mm. long; ligule a dense ring of hairs about 0.5 mm. long; blades erect, rather firm, lanceolate, serrulate and very rough on the margins, 4-10 cm. long, 3-11 mm. wide, densely hispid on the lower surface with spreading hairs, the upper surface with a ring of long stout erect hairs just back of the ligule and usually also more or less hirsute with spreading hairs; panicle considerably exserted, broadly ovate, 5-9 cm. long, its axis glabrous or with a few scattered hairs below, the branches with the axils sparingly hirsute, ascending or spreading, the larger ones 2.5-5 cm. long; spikelets 2.25-2.5 mm. long and 1-1.2 mm. wide, obovate, a little pointed, the first scale usually about one third as long as the spikelet, 1-nerved, glabrous or sparingly pubescent, broadly ovate or nearly orbicular, acute or obtuse, the second and third scales densely pubescent with spreading hairs about 0.25 mm. long, commonly 9-nerved, the second a little shorter than the third, the fourth scale nearly white, a little less than 2 mm. long and about 1 mm. wide, oval.

Type collected at Auburn, Lee Co., Alabama, May 7, 1898, by Messrs. F. S. Earle and C. F. Baker, no. 1537. Nos. 1522, 1524, 1526 and 1529, of this same collection, are also referred here. It is distinguished from any form of *P. pubescens* by its much larger spikelets, and from *P. Atlanticum* by the shorter pubescence and stouter culms.

### ***Panicum pubifolium***

*P. latifolium* var. *molle* Vasey, Contr. U. S. Nat. Herb. 3: 33. 1892. Not *P. molle* Sw. 1788.

*P. Porterianum* Nash, Bull. Torr. Bot. Club, 22 : 420. In part. 1895.

A softly pubescent densely tufted perennial. Culms 3–7 dm. tall, pubescent with soft weak spreading hairs, those at the base the longer, finally branched, the nodes densely barbed with long hairs : leaves 3–5 ; sheaths shorter than the internodes, often only one half as long, ciliate on the margins, densely pubescent, at least all but the uppermost, with spreading weak usually long hairs, also a dense ring of short hairs at the apex ; blades spreading or ascending, minutely serrulate and very rough on the margins, ovate-lanceolate to ovate, acuminate, gradually narrowed to the rounded cordate-clasping base, often inequilateral, pubescent on both surfaces with short soft spreading hairs, the upper primary blades 7–11 cm. long and 2–3 cm. broad, the lower primary blades, as well as those on the branches, smaller : primary panicle usually but little exserted, sometimes included at the base, 7–11 cm. long, its axis, as well as the branches, densely pubescent with short soft spreading hairs, the branches spreading or ascending, the larger ones 3–4 cm. long, the secondary panicles much smaller, included at the base : spikelets 4–5 mm. long and about 1.6 mm. broad, narrowly obovate, the scales distantly inserted on the rachilla, the outer 3 scales strongly pubescent with long spreading hairs, the first scale 3-nerved, from two fifths to one half as long as the spikelet, obtuse or acute, the second scale 11-nerved, the third scale 9-nerved, the former a little shorter than the latter, the fourth scale yellowish, 3.5 mm. long and 1.4–1.6 mm. broad, pubescent at the obtusely apiculate apex.

Usually in rocky woods, New York to Missouri, south to Florida and Mississippi.

Among a large number of specimens of this grass examined, the following are referred to as well representing this species :

PENNSYLVANIA : Chestnut Hill, Easton, July 1, 1887, *T. C. Porter* (distributed as *P. Walteri molle*).

DISTRICT OF COLUMBIA : Washington, June 9, 1894, *Th. Holm*, no. 14 (distributed as *P. latifolium*).

VIRGINIA : Between Fall Creek and Danville, June 3, 1891, *J. K. Small* and *A. A. Heller*, no. 466 (distributed as *P. latifolium*).

MISSOURI : McDonald Co., July 24, 1893, *B. F. Bush*, no. 415 (distributed as *P. latifolium*) ; Montier, June 30, 1894, *B. F. Bush*, no. 754 (distributed as *P. Walteri*).

TENNESSEE : Knox Co., July 9, 1893, *T. H. Kearney, Jr.* (dis-

tributed as *P. Walteri molle*) ; Knoxville, July, 1898, *A. Ruth*, no. 78 (distributed as *P. Porterianum*).

GEORGIA : Stone Mt., Aug. 1-6, 1895, *J. K. Small* (distributed as *P. Porterianum*).

Readily distinguished from *P. Porterianum* by the pubescent sheaths and the lower surface of the blades and the hirsute panicle.

### ***Panicum pyriforme***

A densely tufted perennial. Culms 3-4 dm. tall, rather slender, glabrous, rather weak, finally much branched ; leaves usually 2, or sometimes 3 ; sheaths much shorter than the internodes, densely papillose-hirsute with reflexed hairs ; ligule a ring of hairs about 0.3 mm. long ; blades thin, lax, glabrous on both surfaces, serrulate and very rough on the glabrous margins, long-acuminate, narrowed to the barely rounded base, 1-2 dm. long, 8-12 mm. wide, the basal ones often 2.5 dm. in length, the blades on the branches much shorter : panicle much exserted, ample, loose and open, 6-11 cm. long, its branches widely spreading, the larger ones 4-6 cm. long : spikelets rather few, about 2.5 mm. long and 1.5 mm. wide, broadly obovate, the first scale about one third as long as the spikelet, broadly triangular-ovate, 1-nerved, the second and third scales densely pubescent with long hairs, 9-nerved, the fourth scale yellowish white, about 2 mm. long and 1.5 mm. wide, oval, strongly apiculate.

Type collected by the writer in clay soil, at Orange Bend, Lake Co., Florida, March 12 31, 1894, no. 239. The larger spikelets and glabrous blades at once distinguish this from *P. laxiflorum*, to which it is otherwise related. The following numbers of my collection of 1895 are also referred here : 2034, 2156, 2531a.

### ***Panicum strictifolium***

A tufted perennial. Culms 2.5-5 dm. tall, strongly pubescent toward the base with long stiff hairs, puberulent toward the summit, finally much branched : leaves 3 or 4 ; sheaths much shorter than the internodes, the lower ones densely pubescent with long stiff appressed hairs, the upper ones more sparingly so ; ligule a dense ring of hairs about 1 mm. long ; blades erect or nearly so, rather firm, narrowly lanceolate, appressed-pubescent beneath with stiff hairs, the upper surface often with a few scattered long hairs, the lower blades also with a ring of very long stiff hairs just back of the ligule, serrulate and rough on the margins, the primary blades 4-7 cm. long, 3-5 mm. wide : panicle broadly ovate, 5-7 cm. long, its axis and spreading branches minutely pubescent, the lower

branches 2.5–3.5 cm. long : spikelets obovate, 3 mm. long and about 1.5 mm. wide, the first scale a little more than one half as long as the spikelet, broadly ovate, clasping at the base, 3-nerved, sparingly pubescent, the second and third scales densely pubescent with rather long spreading hairs, 11-nerved, the second distinctly shorter than the third and the fourth, the fourth scale yellowish-white, oval, 2.5 mm. long and about 1.3 mm. wide.

Collected by the writer in the high pine land at Eustis, Lake Co., Florida, May 3, 1894, no. 603. Most nearly related to *P. malaccon*, but distinguished by the less copious pubescence which is much finer and softer, and by the glabrous upper surface of the blades. From *P. ciliiferum* it is at once separated by its narrower blades which are not ciliate on the margins.

### ***Panicum trifolium***

A much tufted perennial, glabrous, with the exceptions noted below. Culms slender, 2–4 dm. tall, finally a little branched : leaves usually 3, rarely 4, the uppermost one much above the middle of the culm and generally but a little below the panicle ; sheaths less than one half as long as the internodes, sometimes but one quarter as long : ligule a dense ring of hairs about 0.4 mm. long ; blades erect or nearly so, firm, lanceolate, often minutely pubescent on the lower surface, the margins thickened and cartilaginous, serrulate and very rough, 1.5–6 cm. long, 1.5–5 mm. wide, the basal ones numerous, 4–6 cm. long : panicle more or less exserted, broadly ovate, 2.5–6 cm. long, its branches ascending, the larger ones 1.5–3 cm. long : spikelets 1.5 mm. long and about 0.7 mm. wide, elliptic, the first scale nearly orbicular, glabrous, 1-nerved, one quarter to one third as long as the spikelet, the second and third scales densely pubescent with short spreading hairs, 7-nerved, the fourth scale white, 1.3 mm. long and about 0.6 mm. wide, obtusely and obscurely apiculate.

In sandy soil, North Carolina to northern Florida, west to Mississippi. Type collected by Dr. John K. Small, in the Ocmulgee River Swamp, below Macon, Georgia, May 18–24, 1895. The following specimens are also referred here :

NORTH CAROLINA : Chapel Hill, *W. W. Ashe* (distributed as *P. ensifolium*).

SOUTH CAROLINA : Aiken, 1867, *H. W. Ravenel*.

FLORIDA : Chapman, 1890, no. 3 ; Apalachicola, 1892, *Dr. Geo. Vasey*.

ALABAMA : Buckley ; Auburn, May 5, 1898, *Earle and Baker*, nos. 1534 and 1547a.

MISSISSIPPI : *S. M. Tracy*, Biloxi, Aug. 1, 1894, no. 2865, March 28, 1898, no. 4602, April 2, 1898, no. 4612 ; Avondale, April 28, 1898, no. 4610 ; Horn Island, June 1, 1898, no. 4613.

Related to *P. albomarginatum*, but distinguished by its thinner blades and more slender culms, which are leafy nearly to the panicle.